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(54) SUN VISOR

(71) We, GEBRUDER HAPPICH G.m.b.H., a German Body Corporate, of Neuenteich 62/76, 56 Wuppertal-Elberfeld, German Federal Republic, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a sun visor of the kind which is generally used in vehicles, having a swivel mounting for a body of the visor including a swivel pin, the swivel pin and a bearing for the swivel pin being made of a synthetic plastics material.

Swivel mountings for sun visors are generally so constructed that sufficient friction is provided in the swivel mounting to retain the body of the sun visor in any position to which it is swung within its range of swivelling motion. In order to obtain a relatively simple mode of construction the friction within the swivel mounting is frequently used for holding the body of the sun visor in its inoperative position. The friction within the swivel mounting is always provided by causing regions of a swivel pin to press against corresponding regions of bearing or receiving surfaces for accommodating the swivel pin, for example by means of an interference fit, or by arranging for individual portions of the swivel mounting to bear resiliently one against the other. However, in none of these prior art forms of construction are the swivel pin and receiving surfaces for receiving the latter fully complementary to one another in shape, so that fortuitous effects or chance occurrences always have to be allowed for, such as spring tension or creep (flow) of plastics material from one region of the swivel mounting, in which one surface is pressed against another, into a region free of such pressure. This phenomenon almost always leads, within the service life of the sun visor, to a reduction of the friction which resists the turning of parts of the swivel mounting relatively to one another. Frequently the change in friction in the swivel mounting due to creep is such that the body of the sun visor is no longer automatically held in position in the higher positions of its range of swivelling motion.

It is the principal object of the invention to provide a sun visor having a swivel mounting which does not suffer from the above-mentioned drawbacks, which is simple and inexpensive to make, and which is constructed in such a manner as to ensure that the force required to cause the parts of the swivel mounting to turn relatively to one another remains substantially unaltered during the whole service life of the sun visor.

According to the invention this object is achieved by providing a sun visor having a body mounted on a base, and a swivel pin received in a bearing by which the body may be swivelled into desired positions relative to the base, the swivel pin and its bearing being both made of a synthetic plastics material, in which the swivel pin and at least a part of either the base or the body are in the form of an integral structural unit, the swivel pin comprising at least one circumferential undercut, and the bearing having a respective projecting ring complementary to the or each undercut, whereby the sun visor body is located axially of the pin, relative to the base.

With this form of construction it is not only possible to dispense entirely with the use of spring elements (whereby structural simplicity is achieved), but it is no longer necessary to make provision for a loss of spring tension. Previously such loss of spring tension has resulted in a reduction of friction and hence of operating efficiency of the sun visor. Similarly, no provision need be made for the risk of creep of material from regions of the swivel mounting subject to pressure into regions of the swivel mounting free of such pressure. The structure of the swivel mounting is also simplified because this need be based only on considerations concerning the most effective structure and usage of the swivel mounting. Attention need no longer be paid to the assembly of the components of the swivel mounting, as the components do not have to be assembled.

In a preferred embodiment of the invention the swivel pin is formed integrally with the base by which the whole sun visor assembly is mounted, for example, in a vehicle. Alternatively it is expedient, particularly when a

reinforcing insert or inlay for the body of the sun visor is made of synthetic plastics material, to arrange for the swivel pin to be formed integrally with the reinforcing insert or with parts thereof, or with a handle for the body of the sun visor.

It may be considered desirable for the resistance to swivelling to be greater at certain points in the swivelling range of the body, for example in certain extreme positions of its swivelling range. The greater force necessary in these extreme positions may be provided by shaping the operative surfaces of the co-operating components of the swivel mounting in such a manner that they act as detent or retaining surfaces for one another. A preferred means is to make at least a part of the swivel pin of non-cylindrical shape and the co-operating bearing of complementary shape, and so to position the non-cylindrical portions of the swivel pin and bearing that they coincide when the body of the sun visor is in its inoperative position, that is to say when it has been moved into an appropriate recess in the vehicle body, if such a recess is provided.

Several embodiments of the invention are diagrammatically illustrated in the accompanying drawing, in which:—

Figures 1 to 3 each show an embodiment of a swivel mounting of a sun visor with differently arranged and constructed swivel pins; and

Figure 4 is a cross-sectional view taken through a swivel mounting of the sun visor.

In the drawing, reference 1 generally designates a base or mounting plate, and 2 a bearing for accommodating a swivel pin of the swivel mounting of the sun visor body.

Figure 1 shows a swivel mounting of a sun visor in which swivel pins 3 are formed integrally with the base 1. The swivel pins 3 have a number of circumferential undercuts 4. These undercuts 4 extend round the swivel pins 3 and are in the form of grooves. The bearings 2 completely surround the swivel pins without any clearance and have a respective projecting ring complementary to each undercut 4. The bearings 2 are integral with a reinforcing insert or inlay 5 which, either by itself or together with other reinforcing means, strengthens the body 6 of the sun visor, of which only a small part is shown.

The embodiment of the invention illustrated in Figure 2 is very similar to that shown in Figure 1. However, there is the difference that the swivel pins 3 are formed integrally with a reinforcing insert 5 of the body 6 of the sun visor; accordingly, the bearings 2 for the swivel pins 3 are integral with the base 1. The swivel pins are similar to those shown in Figure 1, apart from the fact that, in the case of the embodiment of Figure 2, the swivel pins 3 are shorter and there are fewer undercuts 4.

Figure 3 shows a single swivel pin 3a which

passes through the whole mounting plate or base 1a. The bearing 2 for accommodating the single swivel pin is, accordingly, part of the base 1. The swivel pin 3a constitutes the centre portion of a reinforcing insert 5a for strengthening the body 6 of the sun visor. The reinforcing insert 5a only extends a short distance from the swivel mounting, but has receiving surfaces 7 for accommodating another type of reinforcing insert 8, which is in the form of a wire frame. The undercuts 4a are very similar to those (4) in Figures 1 and 2.

Figure 4 shows a base 1, 1a with a swivel pin 3, 3a in cross-section. This is non-cylindrical in cross-section, and it has flattened portions 9 on two opposite sides. Flat portions 10 of the bearing 2, accommodating the swivel pin, are complementary to the flat portions 9 on the swivel pin 3, 3a.

As was stated at the outset, the swivel pin or pins 3 and bearing or bearings 2 are made of synthetic plastics material. Thus, the body of the sun visor can assume a preferential position (for example its inoperative position) which is illustrated in Figure 4 and relies on the undistorted or normal shape of the swivel pin 3, 3a and of their bearing, i.e. the flat portions 9 and 10 are in register. Only moderate force will be needed by the user to turn the body of the sun visor away from its inoperative position into other and operative positions within its total swivelling range because the bearing will distort and stretch when the body is turned.

WHAT WE CLAIM IS:—

1. A sun visor having a body mounted on a base, and a swivel pin received in a bearing by which the body may be swivelled into desired positions relative to the base, the swivel pin and its bearing being both made of a synthetic plastics material, in which the swivel pin and at least a part of either the base or the body are in the form of an integral structural unit, the swivel pin comprises at least one circumferential undercut, and the bearing has a respective projecting ring complementary to the or each undercut, whereby the sun visor body is located axially of the pin, relative to the base.

2. A sun visor according to claim 1, in which the swivel pin is integral with the base and the bearing is integral with the sun visor body.

3. A sun visor according to claim 1, in which the swivel pin is integral with a reinforcing insert of the sun visor body and the bearing is integral with the base.

4. A sun visor according to any preceding claim, in which at least a part of the swivel pin is of non-cylindrical cross-section and at least a part of the bearing is of complementary non-cylindrical cross-section.

5. A sun visor according to claim 4, in which the non-cylindrical part or parts of

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the swivel pin and the complementary part or parts of the bearing are in register when the sun visor body is in an inoperative position and the body may be moved to an operative position only by distortion of the synthetic plastics material of the pin and bearing to rotate the said parts out of register.

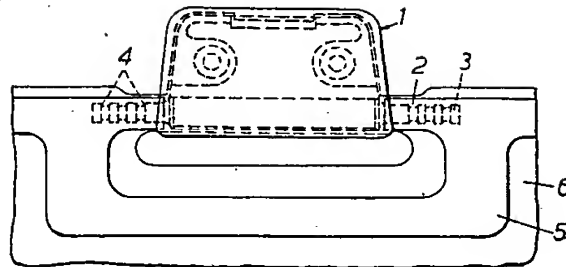
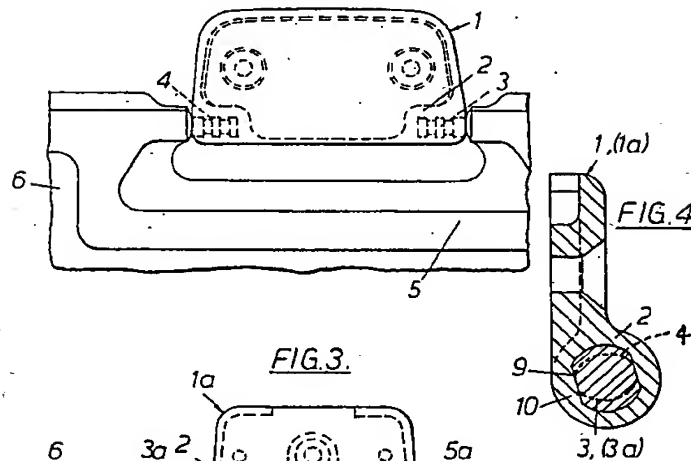
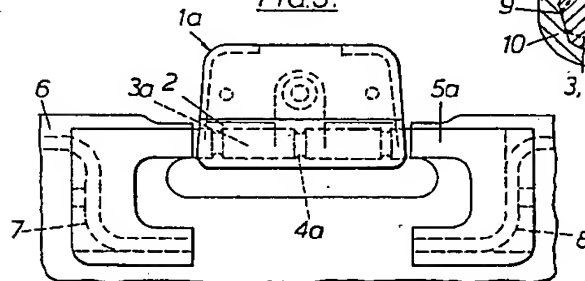
5 6. A sun visor constructed and arranged

substantially as herein described, with reference to and as illustrated in the accompanying 10 drawing.

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FIG.1.FIG.2.FIG.3.**BEST AVAILABLE COPY**